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Space Technology
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Svalbard Initial Mission Recovery Collaborative Efforts

GSAW 2005
Working Group Session
"Teaming Early, Teaming Often"
March 2, 2005

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Agenda:

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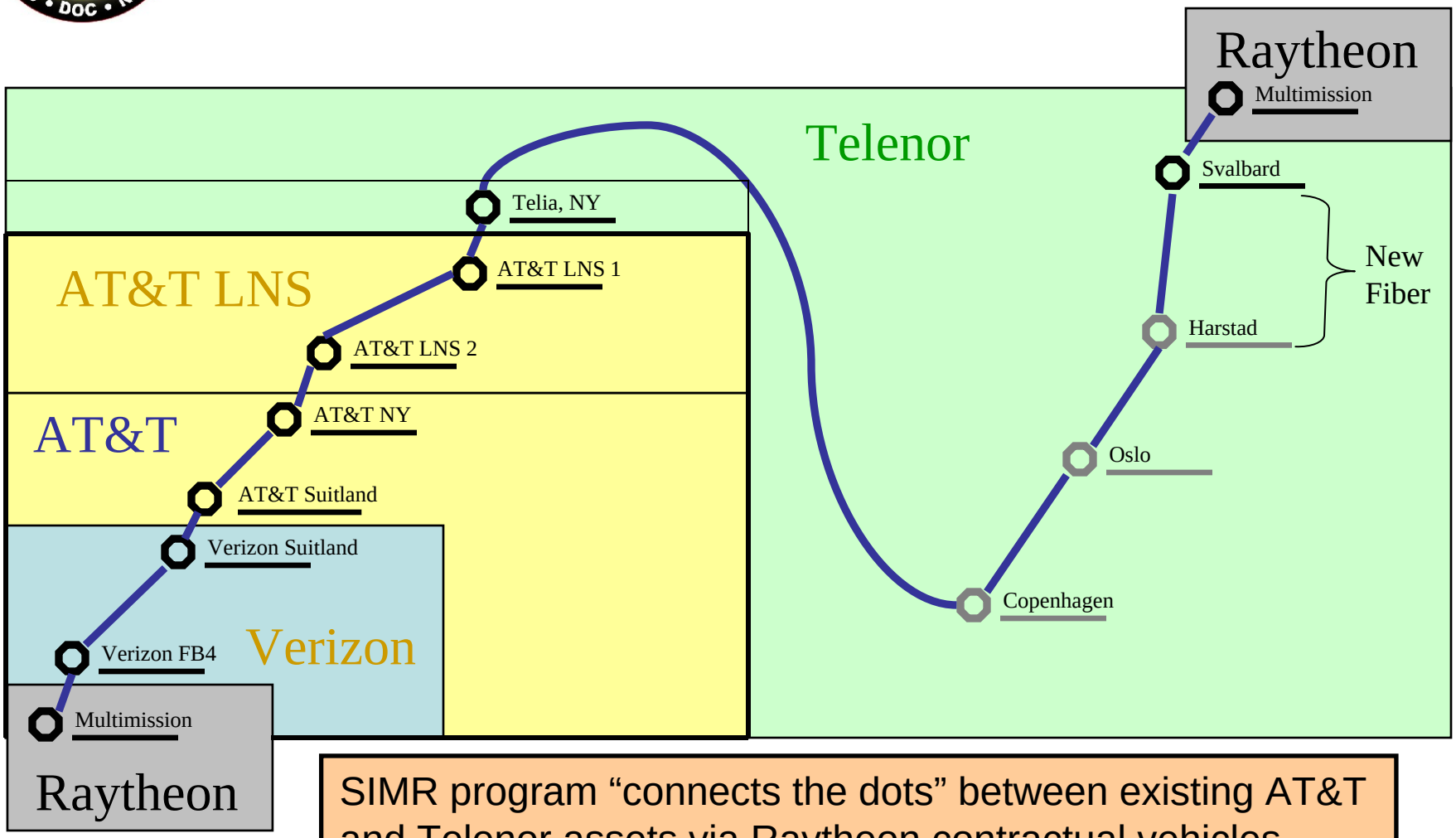
What is Svalbard Initial Mission Recovery (SIMR)?

- The Integrated Program Office (IPO) installed an undersea fiber-optic cable to provide high bandwidth terrestrial connectivity between Svalbard and mainland Norway for the National Polar-orbiting Operational Environmental Satellite System (NPOESS) program.
  - Fiber to be utilized by current NASA missions and NPOESS Preparatory Project (NPP) and NPOESS in the future. The cost and use of this fiber is shared between IPO and NASA, both of which have access to it for a 20 year period.

- SIMR bridges the gap between Now and NPP Ground Readiness in March 2006, allowing NASA immediate access to the newly installed fiber and antenna capabilities. In addition, extends network to WindSat Coriolis program and possibly other polar missions

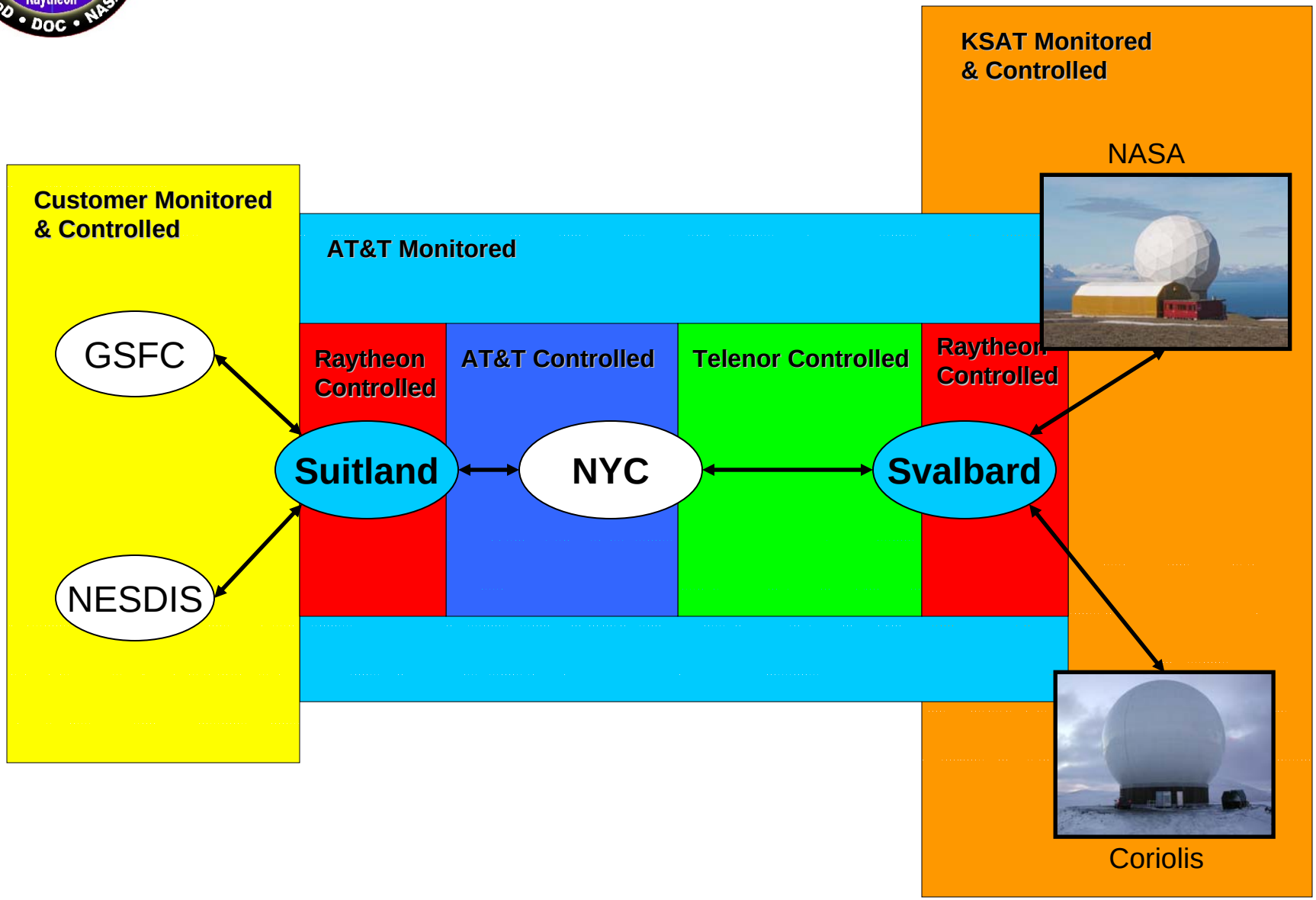
SIMR Fiber Circuit



SIMR program "connects the dots" between existing AT&T and Telenor assets via Raytheon contractual vehicles

Note: This is a simplified diagram showing the major links provided by each telecom service provider.

Key Players
Service Provider Demarcations



Key Players

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- NPOESS Integrated Program Office – Silver Spring, MD
  - Joint agencies composed of Dept of Defense, NASA, Dept of Commerce (NOAA) and contractor support
- Northrop Grumman (NGST) – El Segundo, CA
  - NPOESS Primary contractor
- Raytheon – Aurora, CO
  - Technology Teammate for NGST
- AT&T – New York
- Kongsberg Satellite Services (KSAT) - Norway

What is the Problem?

- Managing and operating the SIMR network to strict customer standards.
  - 20 minute response to customer call drove the need to find a way to cost effectively provide 24 hour a day on call support

- Aggravating factors
  - No one entity oversees the entire network
  - Multiple organizations involved with operations

Why Collaborate?

- Both the government and contractor have complementary capabilities

- IPO Watch Officer
  - 24x7 position already in place for DMSP issues
  - Rotating responsibility for 3 Air Force Officers
  - Checklist disciplined and familiar with troubleshooting ops related problems
  - Not technical position

- Raytheon Corporation
  - Technical expertise
  - Familiar with Svalbard and SIMR project
  - Costly for 24x7 on call position

How was it done?

- IPO chose not to exercise option in Raytheon's SIMR contract to provide operations support due to cost
  - IPO took the responsibility internally utilizing existing IPO Watch Officer personnel
- IPO and Raytheon worked together to identify roles and responsibilities of key players and development flow charts for troubleshooting
- Raytheon provided first draft of Anomaly Resolution Checklist and training material
- IPO revised checklist to match format with which IPO Watch Officer most familiar
- Customers and users reviewed checklist for accuracy
- IPO and Raytheon trained IPO Watch Officer on SIMR and went step by step through the checklist
- Raytheon established dial-up connection to routers at Suitland and Svalbard to enable troubleshooting from Aurora, CO
- IPO, KSAT and Raytheon conduct weekly telecons to technical management issues

Was it Successful?

YES…

- The day after training the IPO Watch Officer was contacted about an anomaly
  - Ran checklist in order to determine cause of anomaly for NASA
  - Turned reins over to Raytheon for final anomaly resolution
  - Raytheon and the IPO Watch Officer stayed in contact through out the process

- Raytheon identified a weakness in communications link between KSAT/Telenor and SIMR customers
  - Worked with Telenor to ensure this problem does not persist

- KSAT/Telenor now contacts all users, IPO Watch Officer, and Raytheon to advise of planned down times

Initial feedback from customers is positive

What helped?

- Working Relationship – Excellent support history between Raytheon and IPO on the NPOESS program
- Tapping Strengths - Exploiting existing area of expertise in satellite operations anomaly by utilizing the IPO Watch Officer
- Strong Preparation – High quality training materials provided to the IPO by Raytheon and strong feedback process as the procedures were updated by the IPO
- Utilization of Technology - Cell phones and pagers allowed technical experts and IPO Watch Officer to be contacted regardless of location and time. Use of email enhanced communication between IPO, Raytheon and KSAT

What Didn't Help?

- Culture - The Norwegian culture/language barrier has caused breakdowns in communications. Raytheon worked to minimize this problem.

- Lack of familiarity with SIMR - Prior to the training the IPO Watch Officers had no background or knowledge in the SIMR program. Thorough training helped to overcome this issue.

- Geography – Most organizations are in different time zones making human contact and adequate communication a challenge. The use of technology improved this area.

What's Next?

- The IPO Watch Officer will continue to work SIMR related issues until NPP launch in FY07

- IPO Watch Officer will play a vital role in the NPP/NPOESS timeframe in the event of a satellite anomaly change or reduced satellite capability which causes NPOESS data not to meet the war fighter's requirements.
  - Will require familiarity with Raytheon operated equipment
  - Anticipate process for developing training materials and administering will be similar to this process just illustrated

Acronyms

ADO – Associate Director of Operations

AT&T LNS – AT&T Local Network Services

AGSEMC – AT&T Government Solutions Enterprise Management

CODDS – Coriolis Data Distribution System

C3S – Command, Control, and Communications Segment

EMOC – Enterprise Management Operations Center

ETRO – Estimated Time to Return to Operations

FWQ – Fair Weighted Queuing

IPO – Integrated Program Office

NPOESS – National Polar-orbiting Operational Environmental Satellite System

NPP – NPOESS Preparatory Project

MOM – Maintenance Operations Manager

SIMR – Svalbard Initial Mission Recovery